



PCT/AU2004/000944

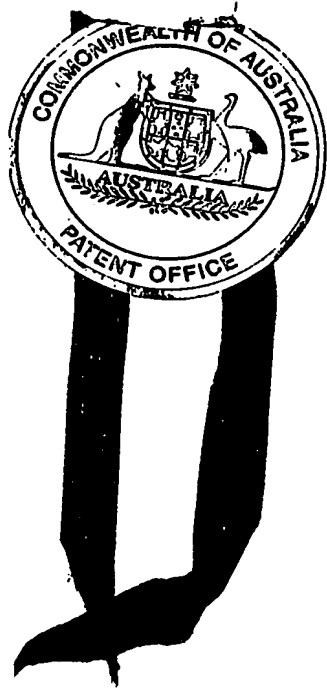
REC'D 28 JUL 2004

WIPO

PCT

Patent Office
Canberra

I, JULIE BILLINGSLEY, TEAM LEADER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. 2003903799 for a patent by THERESA INTERNATIONAL LIMITED as filed on 23 July 2003.



WITNESS my hand this
Twenty-second day of July 2004

J. Billingsley

JULIE BILLINGSLEY
TEAM LEADER EXAMINATION
SUPPORT AND SALES

**PRIORITY
DOCUMENT**

SUBMITTED OR TRANSMITTED IN
COMPLIANCE WITH RULE 17.1(a) OR (b)

BEST AVAILABLE COPY

AUSTRALIA

Patents Act 1990

Theresa International Limited

PROVISIONAL SPECIFICATION

Invention Title:

Juicer

The invention is described in the following statement:

Title**Juicer****Technical Field**

- 5 This invention concerns a juicer, that is a machine for extracting the juice from fruit and vegetables. Such machines are used domestically, and also commercially in restaurants, cafes and juice bars.

Background Art

- 10 Juicers receive fruit or vegetables, either whole or cut into a suitable size; where the skin is unpalatable or undesired it must be removed first. Juicers operate in different ways to extract the juice, but one popular way is by grating or shredding the fruit, separating the resulting pith and juice, and then dispensing the juice.

- 15 Citrus juicers extract the juice from cut citrus fruit without removing the peel, and generally operate in a different manner to other juicers. In citrus style juicers the cut surface of the fruit is pressed onto a pyramidal hub and then squeezed and rotated relative to the hub to convert almost the entire contents of the fruit to liquid. The peel is then discarded.

20 Disclosure of the Invention

The invention is a juicer for fruit and vegetables, comprising:

An electric motor having a driven output shaft.

A shredder having toothed sidewalls with axial symmetry, and mounted for rotation about its axis to the output shaft of the motor.

- 25 A feed tube to deliver pieces to be juiced to the shredder, the feed tube having an open end positioned adjacent the toothed sidewalls of the shredder to deliver fruit and vegetables to the toothed sidewalls for juicing.

- 30 This arrangement has the advantage that, when the shredder is driven in rotation about its axis, the teeth pass laterally across the open end of the feed tube and do not impart spin to the fruit or vegetables.

The motor may be co-axial with the shredder with the axis lying offset from the vertical. This arrangement enables the feed tube to be oriented vertically and still deliver fruit and vegetables to the sidewalls.

- 35 The shredder may be frusto-conical in shape. It may be oriented downwards and mounted at its apex to the output shaft of the motor. It may also be mounted on

bearings arranged around its wide end. The teeth may be arranged on the inner surface of the cone. A conical sieve may extend from the wide end of the shredder.

A lid assembly may enclose the conical sieve. It may provide a spout extending downwardly from sieve to dispense juice into a beaker. It may also provide a pulp receiving chamber offset to one side of the sieve. The rotating action of the shredder, the offset angle of axis and a change in direction between the shredder and sieve walls may serve to throw the pulp and juice up out of the shredder into the chamber and spout.

10 **Brief Description of the Drawings**

An example of this invention will now be described with reference to the accompanying drawings, in which

Fig. 1 is a sectional view through a juicer, and

Fig. 2 is a detailed sectional view of the juicer of Fig. 1 in use.

15

Best Mode of the Invention

The juicer 10 is designed to sit on a counter top and comprises a main unit 20, a lid assembly 40 and a juice receiving beaker 60.

An electric motor 22 is mounted inside the main unit 20, and has its output shaft 23 lying on axis 24 offset from the vertical. The output shaft is connected to a shredder 25. Shredder 25 is generally frusto-conical in shape and is also aligned with axis 24. It is oriented downwards and mounted at its apex 26 to the output shaft 23. It is also mounted on bearings 27 supported by the housing of the main unit 20. A generally conical sieve 28 extends above the upper part of the shredder. A lateral extension 29 of the upper part of the shredder 25 extends to cover over the bearings 27 and the join with the lid assembly 40.

The lid assembly 40 encloses the conical sieve 28. It provides a spout 41 extending downwardly from sieve 28 to dispense juice into beaker 60. It also provides a pulp receiving chamber 42 offset to one side of the sieve 28, and a fruit or vegetable receiving tube 43 which extends vertically down through the lid into the sieve 25. A 'pusher' 44 is provided with a handle 45 and a closed tubular body sized to sit inside tube 43.

Referring in addition to Fig. 2 the juicer will be now be described in greater detail together with its operation and use. The inner surface 30 of shredder 25 is covered with teeth 31 around its sidewalls 32 and on its apex surface 33. Teeth 31 are oriented to tear when the shredder is spun about axis 24 in the direction indicated by

arrow 34. The lower end 47 of tube 43 enters the shredder 25 and opens all along the sidewall 32 and partly along apex surface 33. When the motor 22 is energised its output shaft 23 spins, causing entire shredder 25 to spin about axis 24 in the direction indicated by arrow 34.

5 In use, fruit or vegetables are whole or cut into pieces 50 small enough to enter tube 43. The motor is connected to the mains electricity supply by means of a conventional lead and plug, and the motor is energised. The pieces 50 are pushed down tube 43 by pusher 46 and exit at the lower open end 47. Here the pieces 50 are shown to meet the rotating teeth 31, and are torn up, converting them to pulp and juice.

10 The rotating action of the shredder and the offset angle of axis 24 throws the pulp and juice up out of the shredder in a predicable direction. The sieve wall is offset at a small angle, say 8° , to the shredder wall. This has the effect of slowing down the exit of pulp and juice out of the shredder. The pulp is thrown up in direction 51 out of the shredder 25 and sieve 28. Chamber 42 is located to receive and collect the pulp 52, and the lid 40 is shaped to guide the pulp into the chamber. At the same time the juice is thrown up the sides of sieve 28 where it passes through in the direction indicated by arrows 53. Any pulp entrained in the juice is collected on the surface of sieve 28 where it falls back into the shredder and is again thrown out. The juice is drained away by spout 41 and collected 54 in beaker 60.

20 The multiple bearings 26 and 27 serve to stabilize the shredder against the force exerted down on it by the pusher, and this in turn protects the bearings of the motor, the overall effect is to provide longevity to the moving parts. The offset axis 24 allows the pieces to be introduced vertically and be delivered to the sidewall 32 of the shredder 25. Tearing the pieces occurs by the transverse movement of the teeth across substantially the entire open end of tube 50, causing efficient shredding. The lateral movement of the teeth also tends to entrain the pieces and prevents them from spinning.

30 It will be appreciated by persons skilled in the art that numerous variations and/or modifications may be made to the invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive.

Dated this twenty third day of July 2003

**Theresa International Limited
Patent Attorneys for the Applicant:**

F B RICE & CO

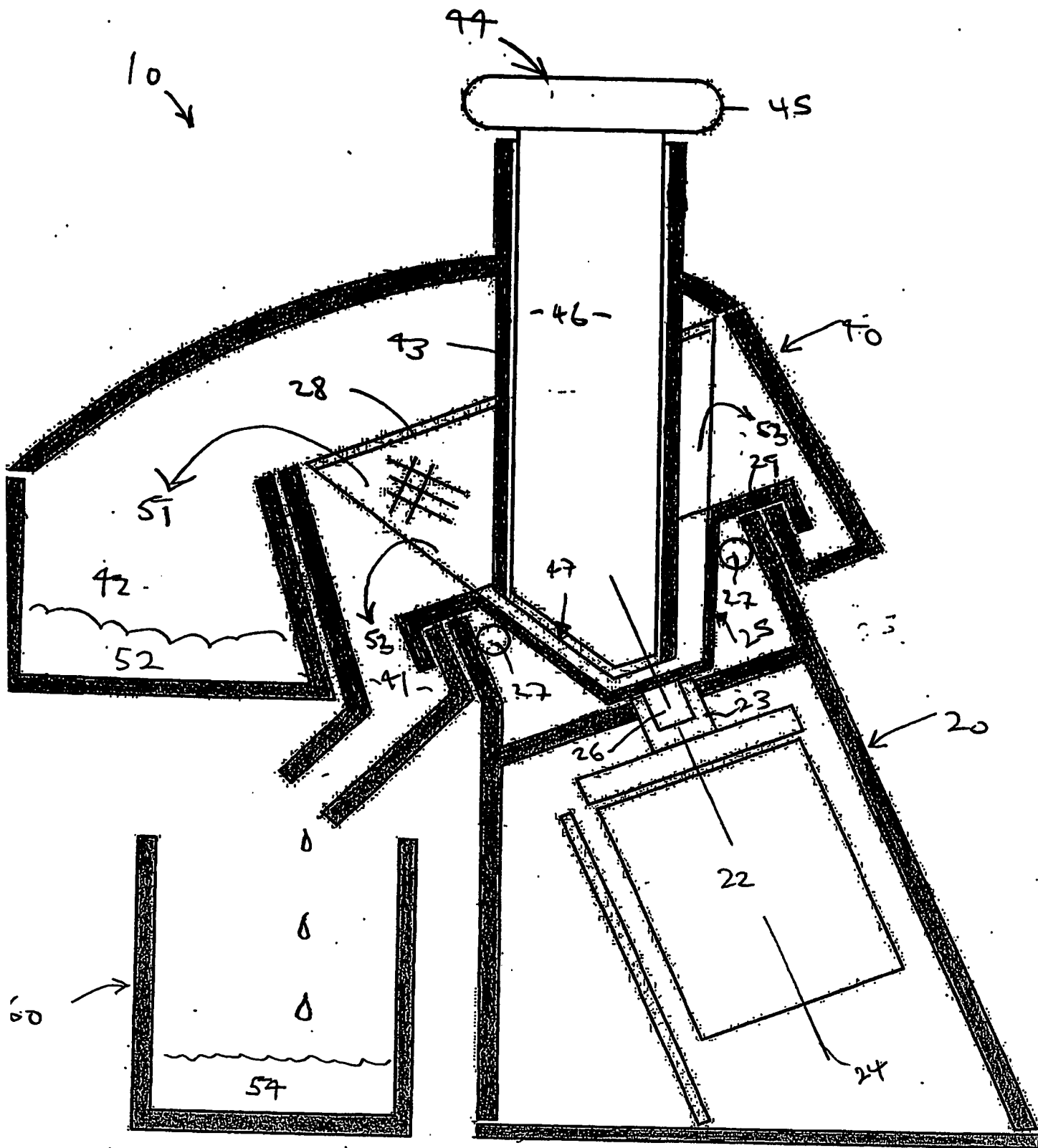


Fig. 1

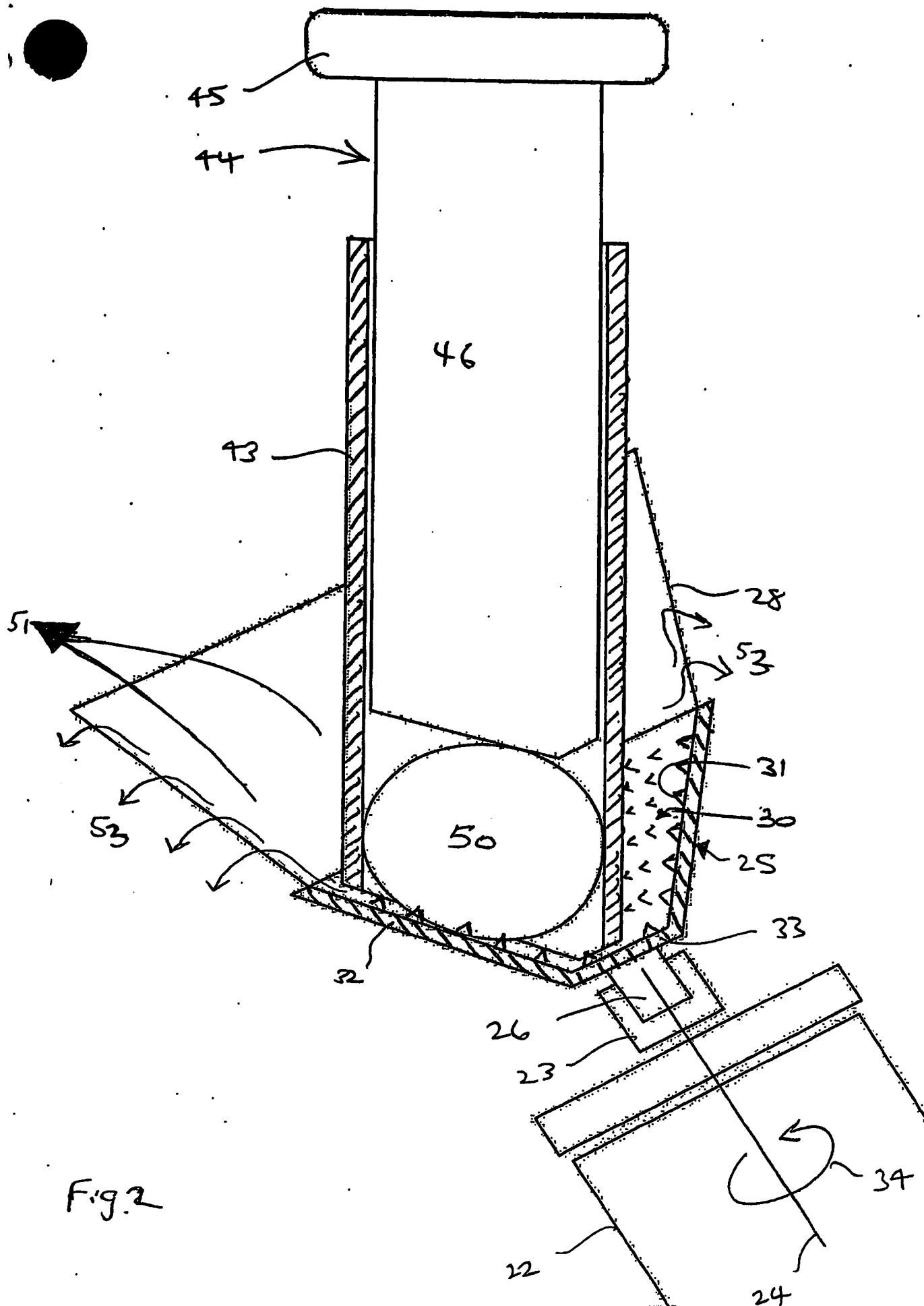


Fig. 2